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ABSTRACT

The Fundamental Achievement Series (FAS) is designed to cover a range of ability from basic literacy to approximately the eighth grade. These tests are used in the employment or educational placement of adults and adolescents who have not been exposed to formal education, or the educationally disadvantaged. The FAS contains a Verbal and a Numerical section, each of which can be administered in 30 minutes. Although the ability to read the test is not necessary, since the instructions and test items are played on a tape recorder; both sections of the test rely, to a large extent, on reading ability. The FAS items measure basic skills such as reading signs, finding numbers in a telephone book, adding sales slips, and telling time. Items frequently included in traditional paper-and-pencil tests are also contained in the FAS. The correlations of FAS items with other achievement test items are presented. The test was administered to 61 clients in a vocational rehabilitation center, with some minor problems which are described. The relevance of the "everyday" FAS items may increase the motivation of disadvantaged adults taking this test; further development is recommended. (Author/GDC)

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Evaluation of a Test for Vocational and Educational Placement of Disadvantaged Adults

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In the past there have been numerous attempts to develop tests that were "culture-free." Such attempts have not been successful. Tests themselves are samples of behavior in society and, thus, a person's past experience does influence his present functioning on tests.

A recent trend has been to develop tests that include items considered fair to all groups being tested, particularly the advantaged and disadvantaged (Educational Testing Service, 1973). The content of the items may be very much related to cultural influences, but as much as possible, the items are to be equally familiar to both groups. This means that either both groups perform equally well on given items, or the number of items favoring specific groups are equally balanced. These tests do not attempt to eliminate cultural influences but attempt to represent the cultural experiences of the groups tested.

Such tests, if successful, would be extremely useful in the vocational and educational placement of disadvantaged and disabled persons. Those whose educational experience has been limited would be able to demonstrate their actual level of functioning in areas such as verbal and numerical ability. Traditional paper-and-pencil tests have been of limited use in rehabilitation agencies, particularly those serving disadvantaged clients. It is important that new tests be examined carefully to see if they indeed can be used in the way the test publishers say they can be used.

Fundamental Achievement Series. The specific test of interest in this paper is the Fundamental Achievement Series (FAS) published by the Psychological Corporation (1968), and reviewed by Lewis R. Aiken in the Journal of Educational Measurement (1970).

The FAS contains a Verbal and Numerical section, each of which can be administered in 30 minutes. A tape recorder is used for presenting the questions and directions, and for controlling the timing; the tape has the advantage of eliminating the necessity for an examinee to read instructions.

The FAS is designed to cover a range of ability from basic literacy to somewhat above eighth grade. The manual states that the tests are intended for use in the employment or educational placement of adults and adolescents who may not have had the usual exposure to formal education.

The Verbal test includes items that measure the ability to read signs, to add prices that appear on a restaurant menu, to find names on apartment house lists, to find numbers in a telephone book, to copy sentences in long hand, and to understand and remember details from brief oral messages. More than half of the test, however, includes more traditional kinds of items common to pencil-and-paper tests: recognizing misspelled words, picture vocabulary, and selecting the synonyms for given words.

The Numerical test includes items that measure the ability to read and write numbers, to tell time, to add the amount of coins, to know simple facts, such as the number of inches in a foot, to measure with a ruler, to calculate the area of a rectangle, to add a sales slip, to write a check, to read a calendar, and to read charts. In addition, thirty of the sixty-nine items in the Numerical test are similar to those found in traditional paper-and-pencil tests: arithmetic computation and reading problems involving arithmetic reasoning.

The authors of the test feel that the inclusion of items related to everyday activities should increase the motivation of testees. In addition, although overall test scores are more reliable than performance on individual items, for some jobs attention might be given to certain parts of the test. For example, certain jobs might require an applicant to take messages and to write legibly, or to add up a restaurant check. Such diagnostic use of the test, however, is limited, since a small number of items represents only a small sample of a person's behavior, and may not be a reliable indication of a person's ability.

How suitable is the FAS for use in a rehabilitation agency? There is still some question as to whether or not the FAS has any advantage over other traditional tests for use with client populations in rehabilitation agencies, that is, the disadvantaged and disabled. To examine this question the FAS was given to a sample of clients (n = 61) in a comprehensive rehabilitation center in New York City. All clients tested were at the center for vocational evaluation.

It was not clear from the testing to what extent the FAS was able to increase motivation and reduce frustration. To a large extent the FAS was still seen as a paper-and-pencil test, ahd had some of the limitations of such tests.

Many clients had difficulty marking the responses in the appropriate spaces. Although testees are to write in the booklets and not on answer sheets, some clients still had difficulty marking correctly. For example, some put X's on the pictures in the picture vocabulary section rather than in the box underneath the picture. These kinds of errors were common,

reflecting a lack of experience in test taking, and perhaps a difficulty in understanding and following instructions.

Another problem area in the tape recording itself. In a few instances the actual pronunciation is not clear (e.g., "Cliff Street" on the bus sign). Also the person's voice has a definite regional accent, which was commented upon by the New York clients. It is not known what effect an unfamiliar accent might have on attention and comprehension.

Also, despite the use of the tape recorder for giving instructions, both the Verbal and Numerical parts of the FAS rely to a large extent on reading ability. In our study, we had scores for a small sample (n = 17) of clients on both the FAS and the General Aptitude Test Battery (GATB). The correlations between the tests are reported in Table 1.

As can be seen, highest correlations were with GATB general learning ability (G), verbal (V), and numerical (N) scores for both the Verbal and Numerical sections of the FAS. Although these data are based on a very small sample, they are in keeping with the trends reported in the FAS manual. The manual reports a correlation of .94 (n = 43) between the FAS Verbal and the Gates-MacGinitie Reading Test. Correlations between the FAS Verbal test and the Verbal Reasoning test of the Differential Aptitude Tests (DAT) for eighth graders ranged from .43-.57. Correlations between the FAS Numerical test and the Verbal Reasoning test of the DAT ranged from .22-.64. These high correlations with traditional tests may in part reflect the large number of traditional items included in the FAS.

The question may arise regarding how successful the more "relevant" items are on the FAS, as compared to the more traditional items. Tables 2 & 3 may serve to clarify this question.

Tables 2 & 3 report the median level of difficulty for sets of items measuring certain skills and also the median discrimination index (point-biserial r) for each set of items. The range of the difficulty and discrimination indices for the sets of items is also given.

Thus, on the first six items of the Verbal test 80% of the clients, on the average, were able to read signs, such as "Smoking Prohibited." The actual percentages or difficulty indices ranged from .67-.87 over the six items. The average point-biserial r with the total score on the Verbal test as criterion was .54. This indicates that on these items those having the highest total scores on the Verbal test also tended to be the ones to get these six items correct. In general, these particular items seem to be doing their job, that is, identifying those with good verbal ability.

The overall conclusion from examining Table 2 is that the "relevant" items (items 1-34) on the Verbal test seem to be functioning as well as the more traditional items (35-100). Items 25-34 seemed to be quite difficult, however, and did not discriminate as well as the other items. In this part of the test the tape recording would make an announcement including details, such as the place and time of a social event. After the announcement the examinees were asked to recall specific facts. These questions required attention to detail, concentration, verbal comprehension, and short-term memory. Performance could possibly have been affected by anxiety level.

The traditional items where one is to select the synonym of a word were also somewhat difficult, but did work well as far as identifying the more verbally proficient clients.

Summary: Using the FAS in vocational and educational guidance. The FAS has been published as a research edition and rightly so. More data must be collected on this test before its value in the field can adequately be judged. A revised form will undoubtedly be published at a later date.

The FAS is a good attempt to construct an achievement test suitable for disadvantaged adults. The FAS has the advantage that it is easy to administer and takes only an hour of the client's time. Thus, it is a relatively quick and efficient way of getting an estimate of a client's basic verbal and numerical ability; a combined score can give an indication of the person's general level of achievement. It should be noted that a verbal and numerical score are not necessarily sufficient to predict success in one job as compared to another. Such scores do, however, given an indication of a person's present level of ability and suggest possible levels of entry for jobs or further opportunities for educational training.

Another advantage of the FAS is that instructions have been recorded on a tape. Thus, persons with poor reading skills should have an advantage on this test over traditional paper-and-pencil tests. Reading ability does play a large part, however, in being able to answer questions on both the Verbal and Numerical tests.

What makes the FAS worth further investigation in rehabilitation settings, despite the limitations discussed previously, is the use of items based on everyday experience. Such items should make the test more interesting to adults who have very practical concerns and want to see the relevancy of tests that they take. In addition, the results of the study reported here suggest that the more "relevant" everyday items may be very important in tests of numerical ability, particularly when testing disadvantaged persons.

Thus, on the Verbal test the inclusion of more relevant material may not have contributed any more psychometric information than conventional items; on the other hand, the inclusion of such "relevant" items did not adversely affect the results. Although motivational level may have been influenced by the use of the more relevant content, it has not been shown to have had a differential effect on item type.

For the Numerical test another picture seems to emerge. The easiest items and the items with the best discrimination were those that were more "relevant" and whose content was more familiar to the examinees (e.g., telling time, adding coins, recognizing numbers, and general information such as the number of inches in a foot). Reading a mileage chart seemed to be very difficult, although the clients were able to read a postal chart and a sales chart. However, the chart reading items in general did not discriminate well between those with high and low scores on the Numerical test.

The reading problems (arithmetic reasoning) were very difficult, with only 12% getting an item correct on the average. These problems reflect both reading ability, as well as level of arithmetic reasoning. Performance on such tests is very much influenced by educational experience and training.

Although more research needs to be done in this area, it appears that for disadvantaged clients it is important to include items on tests of numerical ability that are directly related to everyday experience. Such items seem to be better for identifying persons who can work in areas requiring some ability to work with numbers. Such items may also be useful for selecting persons who would benefit by job training, or who could benefit by additional schooling or remedial instruction.

It should be noted, however, that although the test was designed to contain material familiar to both the advantaged and disadvantaged, results of studies reported in the FAS manual reveal that differences in test performance between blacks and whites have not been eliminated.

Although there are limitations to the FAS, it is probably one of the best around for its stated purposes. Individual users should, however, conduct their own studies to see how useful the test is for their specific needs.

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(Footnote:

I would like to thank Dr. Norman Berven of the ICD Rehabilitation and Research Center for the computer processing of the data reported in this paper.)

Table 1

Product moment correlations between scores on Fundamental Achievement Series (FAS) and General Aptitude Test Battery (GATB).

(N = 17)

	G	V	N	S	P	Q	K	F	M
FAS - V	.668	.764	.784	-.153	.686	.695	.609	.158	.176
FAS - N	.795	.798	.908	-.105	.595	.589	.614	.080	.079
FAS - T	.753	.809	.872	-.136	.666	.670	.631	.127	.130

Table 2

Median & range of difficulty and discrimination indices for items from the FAS Verbal Test Form B

Items	# of Options	Description	# of Items	Difficulty		Discrimination	
				Median	Range	Median	Range
1-6	4	Reading signs	6	.80	.67 - .87	.54	.46 - .56
7-8	4	Bus signs	2	.70	.62 - .77	.34	.33 - .35
9-13	open	Menu	5	.57	.13 - .74	.55	.20 - .56
14-18	12	Apartment house list	5	.90	.79 - .93	.50	.41 - .67
19-21	9	Telephone book	3	.90	.80 - .92	.54	.46 - .54
22-24	open	Copy sentences	3	.62	.61 - .70	.57	.56 - .57
25-34	open	Attention - concentration - anxiety Short-term memory - detail	10	.30	.16 - .48	.38	.29 - .42
35-58	2	Spelling	24	.70	.32 - .95	.50	.02 - .69
59-76	4	Picture vocabulary	18	.91	.59 - .98	.41	.00 - .53
77-100	4	Synonymns	24	.59	.36 - .85	.57	.31 - .70

(N = 61, $\overline{X}$ = 66.62, SD = 19.41)

Table 3

Median & range of difficulty and discrimination indices for items from the FAS Numerical Test Form B

Items	# of Options	Description	# of Items	Difficulty		Discrimination	
				Median	Range	Median	Range
1	4	Number recognition	1	.93	.93	.46	.46
2-3	4	Time (clock) recognition	2	.89	.89	.58	.57 - .59
4-9	open	General information	6	.61	.16 - .80	.50	.44 - .57
10-13	open	Adding coin values	4	.89	.87 - .93	.46	.43 - .52
14-22	4	General information	9	.75	.28 - .98	.39	-.12 - .54
23	4	Reading a ruler	1	.33	.33	.08	.08
24	4	Computing area	1	.11	.11	.19	.19
25-26	open	Adding a restaurant bill	2	.55	.54 - .56	-.12	-.19 - (-).05
27-28	open	Writing a personal check	2	.36	.34 - .38	.12	.06 - .17
29-31	open	Reading a calendar	3	.46	.36 - .56	-.09	-.10 - (-).08
32-33	open	Reading a chart (graph)	2	.50	.43 - .56	-.07	-.09 - .05
34-36	open	Reading a postal chart	3	.48	.26 - .49	.03	.03 - .15
37-38	open	Reading a mileage chart	2	.02	.00 - .04	-.12	-.24 - .00
39	open	Recognizing "radius"	1	.10	.10	.22	.22
40-59	open	Numerical computation	20	.33	.03 - .56	.05	-.15 - .29
60-69	open	Word problems	10	.12	.02 - .41	.14	.00 - .25

($N = 61$, $\bar{X} = 40.59$, $SD = 13.29$)